U.S. FISH AND WILDLIFE SERVICE
SPECIES ASSESSMENT AND LISTING PRIORITY ASSIGNMENT FORM

SCIENTIFIC NAME: Oreomystis bairdi

COMMON NAME: Kauai creeper or Akikiki

LEAD REGION: Region 1

INFORMATION CURRENT AS OF: 7/27/2006

STATUS/ACTION

___ Species assessment - determined we do not have sufficient information on file to support a proposal to list the species and, therefore, it was not elevated to Candidate status
___ New candidate
_X_ Continuing candidate
___ Non-petitioned
_X_ Petitioned - Date petition received: 05/11/2004
___ 90-day positive - FR date:
_X_ 12-month warranted but precluded - FR date: 05/11/2005
_N_ Did the petition request a reclassification of a listed species?

FOR PETITIONED CANDIDATE SPECIES:
a. Is listing warranted (if yes, see summary of threats below)? Yes
b. To date, has publication of a proposal to list been precluded by other higher priority listing actions? Yes
c. If the answer to a. and b. is "yes", provide an explanation of why the action is precluded.

We find that the immediate issuance of a proposed rule and timely promulgation a final rule for this species has been, for the preceding 12 months, and continues to be, precluded by higher priority listing actions. During the past 12 months, almost our entire national listing budget has been consumed by work on various listing actions to comply with court orders and court-approved settlement agreements, emergency listings, and essential litigation-related, administrative, and program management functions. We will continue to monitor the status of this species as new information becomes available. This review will determine if a change in status is warranted, including the need to make prompt use of emergency listing procedures. For information on listing actions taken over the 12 months, see the discussion of "Progress on Revising the Lists," in the current CNOR which can be viewed on our Internet website (http://endangered.fws.gov/).

___ Listing priority change
Former LP: ___
New LP: ___
Date when the species first became a Candidate (as currently defined): 1994

___ Candidate removal: Former LPN: ___

___ A – Taxon is more abundant or widespread than previously believed or not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status.

___U – Taxon not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status due, in part or totally, to conservation efforts that remove or reduce the threats to the species.

___ F – Range is no longer a U.S. territory.

___ I – Insufficient information exists on biological vulnerability and threats to support listing.

___ M – Taxon mistakenly included in past notice of review.

___ N – Taxon does not meet the Act's definition of "species."

___ X – Taxon believed to be extinct.

ANIMAL/PLANT GROUP AND FAMILY: Birds, Family Fringillidae (Finches)

HISTORICAL STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: Hawaii, island of Kauai

CURRENT STATES/COUNTIES/TERRITORIES/COUNTRIES OF OCCURRENCE: Hawaii, island of Kauai

LAND OWNERSHIP: Of the 3,617 hectares (ha) (8,938 ac) currently occupied by the Kauai creeper, 83 percent is owned by the State of Hawaii, and 17 percent is privately owned, including 12 percent by Robinson Family Partners and 5 percent by Alexander and Baldwin Hawaii Incorporated.

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LEAD FIELD OFFICE CONTACT: Pacific Islands Fish and Wildlife Office, Marilet A. Zablan, 808-792-9400, marilet_zablan@fws.gov

BIOLOGICAL INFORMATION

Species Description

The Kauai creeper, or akikiki (Oreomystis bairdi) is a small (12-17 grams (0.4-6.0 ounces) bird. It is dark gray to olive gray on the head, back, sides and flanks, and off-white on the throat, breast, belly, and undertail coverts. The bill is short, slightly decurved, and pale pink. The legs are short and the legs and feet are dull pink. Males and females are similar. Juveniles resemble adults but have white spectacles around the eyes. The song is a short, descending trill. Males and females give a soft "whit" contact call (Pratt et al. 1987; U.S. Fish and Wildlife Service (Service) 2003).

Taxonomy

The Kauai creeper is found only on the island of Kauai, and there are no described subspecies. It has one congener, the Hawaii creeper (Oreomystis mana), which is endemic to the island of Hawaii. The Kauai creeper was originally described as Oreomyza bairdi (Stejneger 1887), was once placed in the genus Paroreomyza, and has been treated as a subspecies of various other taxa, but its correct taxonomic position and species status were later determined by Raikow (1977), Johnson et al. (1989), Pratt (1992), and James (2004). We have reviewed the available taxonomic information and have concluded the species is a valid taxon.

Habitat/Life History

The Kauai creeper is most common in mesic and wet montane forests dominated by ohia (Metrosideros polymorpha), with a diverse subcanopy including olapa and lapalapa (Cheirodendron spp.), ohia ha (Syzygium sandwicensis), kawau (Ilex anomala), kolea (Myrsine lessertiana), and a diverse understory of native plants including ohelo (Vaccinium calycinum), kanawao (Broussaisia arguta), and naenae (Dubautia spp.). It generally forages on trunks, branches, and twigs of live and dead trees, and occasionally forages in sub-canopy shrubs. It feeds primarily on insects, insect larvae, and spiders gleaned and extracted from bark, lichens, and moss (Foster et al. 2000).

Historical Range/Distribution

The Kauai creeper is endemic to the island of Kauai. It was considered common from high to low elevation in native forests in the late 1800s (Perkins 1903), and was locally abundant on and near the Alakai Plateau in the early 1960s (Richardson and Bowles 1964). In 1968-1973, the range was thought to encompass areas from 600 to 1,600 meters (m) (1,968 to 5,248 feet (ft)) elevation, and the species was estimated to number 6,832 ± 966 birds (Sincock et al. 1984). In 1981, the Hawaii Forest Bird Survey estimated there were approximately 1,650 ± 450 Kauai creepers in a 25 square kilometers (9.7 square miles) area of the southeastern Alakai, in the vicinity of what is now known as Sincock's Bog (Scott et al. 1986). Sincock et al. (1984) had estimated the population in this same area to be 2,300 ± 700 birds in 1968-1973.

Current Range/Distribution

Surveys in March-April 2000 by Foster et al. (2004) showed that in the last 30 years the range (area where the species has been observed) of the Kauai creeper has decreased from 88 to 36 square kilometers (21,750 to 8,896 acres (ac)) and that the species has disappeared from much of the periphery of its range. During surveys in April 2005 Kauai creepers were detected in most areas where they were detected in 2000 by Foster et al. (2004), but a population estimate is not yet available based on the 2005 data (Hawaii Division of Forestry and Wildlife, unpubl. data).

Population Estimates/Status

Surveys in March-April 2000 by Foster et al. (2004) showed that in the last 30 years the estimated population of the Kauai creeper has declined from 6,832 ± 966 to 1,472 ± 680 birds. This relatively rapid and substantial rate of decline indicates the species is at risk of extinction. A population estimate based on the 2005 data will update the status of the species and help clarify whether the decline is continuing.

THREATS

A. The present or threatened destruction, modification, or curtailment of its habitat or range.
The habitat of the Kauai creeper has been and continues to be negatively affected by invasive alien plant species that displace native plant species used by the creeper for foraging and nesting, and by the action of feral ungulates, particularly feral pigs and goats (Foster et al. 2004, E. VanderWerf, pers. obs.). The Kauai creeper is dependent upon areas of intact native forest for foraging and nesting, and the negative impacts of feral ungulates on forested ecosystems in Hawaii include direct browsing of native plants, soil erosion, disruption of native plant regeneration, spreading of invasive alien plant seeds, opening of space for invasive alien plants, and creation of breeding habitat for mosquites that carry alien diseases (Cabin et al. 2000). Hunting of feral pigs is allowed in the Alakai Wildnerness Preserve, where most of the remaining Kauai creepers occur, but because of the remoteness and rugged terrain in this area, little hunting actually occurs. Continued habitat degradation resulting from the invasion of many non-native weeds and the actions of feral ungulates is likely to continue damaging forest structure and integrity, and thus likely to result in continued loss of habitat and curtailment of range, i.e. it continues to destroy the habitat of the creeper and curtail its range.

B. Overutilization for commercial, recreational, scientific, or educational purposes.
Not known to be a threat.

C. Disease or predation.
Avian diseases transmitted by the introduced southern house mosquito (Culex quinquefasciatus), including pox (Poxvirus avium) and malaria (Plasmodium relictum), play a major role in limiting the distribution of many Hawaiian forest bird species (Scott et al. 1986, van Riper et al. 1986, Atkinson et al. 1995). The Kauai creeper was formerly found at lower elevations but currently is restricted to higher elevation areas, where mosquitoes and the diseases they carry are less prevalent (Scott et al. 1986). However, mosquitoes have been found recently near the highest elevations on Kauai (C. Atkinson, U.S. Geological Survey-Biological Research Discipline (BRD), unpubl. data, cited in LaPointe 2000), indicating the entire population of the Kauai creeper may be threatened by alien diseases. Mistnetting of forest birds from 1994 to 1997 in three locations, Pihea-Alakai Swamp Trail, Koiae Camp, and Sincock's Bog, documented 2-5 percent of all birds with active malaria infections, and up to 12 percent with malarial antibodies (C. Atkinson, BRD, unpubl. data, cited in LaPointe 2000). None of the 10 Kauai creepers tested for malaria had active infections or evidence of past infection (C. Atkinson, BRD, unpubl. data, cited in LaPointe 2000), but the sample of Kauai creepers examined for disease is very small and more data is needed to determine if this low infection rate is caused by a low transmission rate or high mortality of infected birds. Although no Kauai creepers have been documented to be infected with either avian malaria or pox, closely related species are known to be highly susceptible to these diseases and to have ranges largely restricted by disease (USFWS 2003). There is evidence that one of the more abundant Hawaiian forest bird species has evolved some resistance to alien diseases at low elevations (Woodworth et al. 2005), but the complete disappearance of the Kauai creeper from lowland habitats indicates this species has not evolved resistance to disease, and it is very unlikely that such evolution could occur rapidly enough to keep pace with expansion of mosquito populations. During clinical trials with some Hawaiian

forest bird species, virtually all experimentally infected individuals died, so the absence of infected birds in the wild may in fact indicate a very high mortality rate from disease, and thus that disease is a very serious threat (Atkinson et al. 1995

Introduced predators, particularly black rats (Rattus rattus), are one of the most serious threats to Hawaiian forest birds (Atkinson 1977; Scott et al. 1986; VanderWerf and Smith 2002). The biology of the Kauai creeper has been little studied (Eddinger 1972) and predation has not been documented on nests or adults, but black rats, Polynesian rats (R. exulans), Norway rats (R. norvegicus), and feral cats (Felis domesticus) are present in the Alakai Swamp on Kauai (Tweed et al. in press) and are potential predators on roosting or incubating adults, nests, and young. Predation by black rats has been documented on nests of another endangered bird species that inhabits the same areas, the puaiohi or small Kauai thrush (Myadestes palmeri) (Snetsinget et al. 1994, Tweed et al. in press). Two species of owls, the native pueo (Asio flammeus sandwichensis) and the introduced barn owl (Tyto alba) also occur on Kauai and are known to prey on forest birds, possibly including the Kauai creeper (Snetsinger et al. 1994).

D. The inadequacy of existing regulatory mechanisms.
The Kauai creeper, like all other Hawaiian honeycreepers, is not included on the list of species covered under the Migratory Bird Treaty Act, and thus receives no protection under Federal law. All native birds, including the Kauai creeper, are protected in Hawaii by State Law under Title 13, Part 2, Chapter 125 of the Hawaii Administrative Rules, which prohibits the hunting, capturing, killing, possession, shipping, etc., of migratory birds, unless authorized by a permit, though hunting nor collecting is known to be a threat to the species at this time.

The Forest Reserve Act of 1903 was an important action that protected watersheds in Hawaii. This act has been strengthened and re-titled Hawaii Department of Land and Natural Resources (DLNR) Title 13, Chapter 104 Rules Regulating Activities Within Forest Reserves and provides protection to native forest values from certain degrading factors caused by human activities. The Hawaii DLNR Regulation (Administrative Rule No. 1, Chapter 3) established the 4,022 ha (9,939 ac) Alakai Wilderness Preserve in 1964, recognizing the pristine forest values of that area and the need to control potential degrading factors.

E. Other natural or manmade factors affecting its continued existence.
Hurricanes struck Kauai in 1983 and 1992 and significantly reduced habitat of the Kauai creeper by destroying forests and promoting the spread of alien weeds. Surveys by Foster et al. (2000) showed that the Kauai creeper declined significantly in range and abundance from 1989 to 1994.

Climate change likely poses a threat to the Kauai creeper by causing an increase in the elevation at which regular transmission of avian malaria occurs (Benning et al. 2002). Experimental evidence has shown that the malarial parasite does not develop in birds below 13° Celsius (C) (55° Fahrenheit (F)), and field studies have found that maximum malaria transmission occurs where mean ambient summer temperature is 17° C (63° F) (LaPointe 2000). Between 13° and 17° C (55° and 63° F), malaria transmission is sporadic and usually associated with warmer periods, such as El Nino events (Feldman et al. 1995). There are no forested areas on Kauai where mean ambient temperature is below 13° C (55° F), meaning all areas are subject to

malaria at least periodically. Benning et al. (2002) used GIS simulation to show that an increase in temperature of 2° C (3.6 ° F), which is predicted by some climatic models (Pounds et al. 1999; Still et al. 1999; Intergovernmental Panel on Climate Change 2001), would raise the 17° C (63° F) isotherm by 300 m (984 ft), resulting in an 85 percent decrease in the land area where malaria transmission currently is only periodic. Loss of such a large proportion of suitable habitat would likely result in extinction of the Kauai creeper.

In addition, species like the Kauai creeper that are endemic to single small islands are inherently more vulnerable to extinction than widespread species because of the higher risks posed to a single population by random demographic fluctuations and localized catastrophes such as hurricanes and disease outbreaks. When considered on their own, the natural processes associated with being a single island endemic and the habitat perturbation caused by hurricanes do not affect the Kauai creeper to such a degree that it is threatened or endangered with extinction in the foreseeable future, but these natural processes can exacerbate threats caused by anthropogenic factors, such as habitat loss for human development or predation by alien species.

CONSERVATION MEASURES PLANNED OR IMPLEMENTED

The Draft Revised Recovery Plan for Hawaiian Forest Birds (Service 2003) also addresses the Kauai Creeper. This plan was drafted by the Hawaiian Forest Bird Recovery Team, and includes recovery criteria for the Kauai creeper, an overall recovery strategy, and a variety of recovery actions that will benefit the Kauai creeper and other bird species that occupy the same range, including actions aimed at reducing habitat degradation caused by alien plants and alien ungulates, diseases transmitted by alien mosquitoes, and predation by alien mammals.

Surveys of the distribution and abundance of the Kauai creeper have been conducted once every 5 years since 1989 (Foster et al. 2004), most recently in 2005. Investigation of disease prevalence in the Kauai creeper and other bird species on Kauai was conducted from 1994 to 1997 (C. Atkinson, BRD, unpubl. data, cited in LaPointe 2000).

SUMMARY OF THREATS

The primary threats to the Kauai creeper are alien diseases carried by alien mosquitoes, habitat loss and degradation caused by invasive alien plants and the actions of feral ungulates, and possibly predation by alien animals, particularly black rats. These threats are occurring over a large portion of the current range of the species. In light of the small number of estimated individual remaining, their habitat requirements, and their life history characteristics, the magnitude of these threats is high.

For species that are being removed from candidate status:

___Is the removal based in whole or in part on one or more individual conservation efforts that you determined met the standards in the Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)?

RECOMMENDED CONSERVATION MEASURES

All the planned conservation measures described above and in the Draft Revised Recovery Plan for Hawaiian Forest Birds (Service 2003) are recommended.

LISTING PRIORITY

THREAT			
Magnitude	Immediacy	Taxonomy	Priority
High	**Imminent**	Monotypic genus	1
		Species	**2***
		Subspecies/population	3
	Non-imminent	Monotypic genus	4
		Species	5
		Subspecies/population	6
Moderate to Low	Imminent	Monotypic genus	7
		Species	8
		Subspecies/population	9
	Non-imminent	Monotypic genus	10
		Species	11
		Subspecies/population	12

Rationale for listing priority number:

Magnitude:
In light of the limited distribution and abundance of the Kauai creeper and its natural history characteristics, the magnitude of threats is high. One of the primary threats to the Kauai creeper, alien mosquitoes that transmit avian diseases, occurs throughout the range of elevations over which the creeper occurs, and malaria transmission occurs at least periodically among native birds over the species' entire range. Another serious threat, habitat loss and degradation caused by invasive alien plants and the actions of alien ungulates, is occurring over a large portion of the species range. It will be very difficult to reduce the magnitude of these threats. Removal of alien plants and restoration of native forest is very difficult and costly in the remote areas occupied by the Kauai creeper. Similarly, there currently is no effective and environmentally sound method of controlling mosquitoes in large areas of forested habitat, so the threat from disease is unlikely to decline, and may actually increase if climate change increases the distribution of mosquites on Kauai.
Imminence:
Threats to the Kauai creeper are imminent. The primary threats to the Kauai creeper, habitat loss and disease, have been occurring for several decades, are continuing to occur, and are likely to continue in the future. Mosquitoes and the diseases they carry are already present in the areas where Kauai creepers occur, and the abundance of mosquitoes and frequency of disease transmission may increase with global warming. Efforts are underway to reduce habitat loss through control of invasive alien plants in some areas, but there is no weed control in most of the range of the Kauai creeper, and habitat loss is already occurring. A large scale survey in 2000

showed that in the last 30 years the estimated population declined from 6,832 ± 966 to 1,472 ± 680 birds, the range decreased from 88 to 36 square kilometers, and that the species has disappeared from much of the periphery of its range (Foster et al. 2000).

Yes Have you promptly reviewed all of the information received regarding the species for the purpose of determining whether emergency listing is needed?

Is Emergency Listing Warranted? No. The species does not appear to be appropriate for emergency listing at this time because the immediacy of the threats is not so great as to imperil a significant proportion of the taxon within the timeframe of the routine listing process. If it becomes apparent that the routine listing process is insufficient to prevent significant losses that may result in this species' extinction, then the emergency rule process for this species will be initiated. We will continue to monitor the status of the Kauai creeper as new information becomes available. This review will determine if a change in status is warranted, including the need to make prompt use of emergency listing procedures.

DESCRIPTION OF MONITORING

Assessment of the Kauai creeper is conducted by compiling information from surveys of suitable forest habitat on Kauai. Quantitative information of this type was first collected from 1968-1973 (Sincock et al. 1984). Following completion of the comprehensive Hawaii forest bird survey in the early 1980s (Scott et al. 1986), the Hawaii State Division of Forestry and Wildlife has conducted annual forest bird surveys in collaboration with the USGS Biological Resources Discipline, the Service, and other organizations. One of the main Hawaiian Islands is surveyed each year on a rotational basis, with most islands surveyed about once every 5 years. Surveys have been conducted on Kauai in 1989, 1994, 2000, and 2005. These surveys have included the majority of intact native forest on Kauai above about 1,200 m (3,936 ft), with special attention to the higher elevation portions of the Alakai Swamp that support the highest densities of endangered forest birds. Analyses of the survey data have been conducted by the Hawaiian Forest Bird Interagency Database Project, which is administered by BRD, and is jointly funded by BRD, the Service, the Hawaii Division of Forestry and Wildlife, and the National Park Service. Data from the most recent survey in April 2005 have not yet been analyzed.

There has been extensive discussion of the status of the Kauai creeper among species experts on the Hawaiian Forest Bird Recovery Team. The recovery team includes representatives from the Hawaii Division of Forestry and Wildlife, the Service, the National Park Service, the USGS Biological Resources Discipline, and the University of Hawaii. Recovery team meetings culminated in publication of the Draft Revised Recovery Plan for Hawaiian Forest Birds (Service 2003), which includes the Kauai creeper as a candidate species. The latest species assessment was sent to four species experts for review on August 22, 2005, and to enquire if they had any new information relevant to the species; no comments or new information was received. This assessment thus is based on the best available scientific and commercial data. However, considering the rapid rate of decline observed from 1970 to 2000 (Foster et al. 2004), more frequent field surveys may be needed to monitor the status of the species, identify locations where management actions could be best implemented, and assess the efficacy of any

management actions implemented. The Draft Revised Recovery Plan for Hawaiian Forest Birds recommends annual surveys in the core of the Alakai Wilderness Preserve, where most of the remaining Kauai creepers occur (Service 2003).

COORDINATION WITH STATES

Indicate which State(s) (within the range of the species) provided information or comments on the species or latest species assessment: None.

Indicate which State(s) did not provide any information or comments: Hawaii. The latest assessment form was sent to three biologists from the Hawaii Division of Forestry and Wildlife (DOFAW) on August 22, 2005, and earlier to the DOFAW Administrator in October 2004, with requests for review, comment, corrections, and/or additional information.

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APPROVAL/CONCURRENCE: Lead Regions must obtain written concurrence from all other Regions within the range of the species before recommending changes, including elevations or removals from candidate status and listing priority changes; the Regional Director must approve all such recommendations. The Director must concur on all resubmitted 12-month petition findings, additions or removal of species from candidate status, and listing priority changes.

Approve: Acting _____ 11/16/05
Regional Director, Fish and Wildlife Service Date

Concur: _____ August 23, 2006
Director, Fish and Wildlife Service Date

Do not concur: _____
Director, Fish and Wildlife Service Date

Date of annual review: 9/29/2005
Conducted by: Dr. Eric A. VanderWerf, Hawaiian Birds Recovery Coordinator (Pacific Islands Fish and Wildlife Office review by: Marilet A. Zablan, Vertebrate Conservation Program Leader; Gina M. Shultz, Assistant Field Supervisor for Endangered Species; and Patrick Leonard, Field Supervisor)